APPENDIX B

TECHNICAL ANALYSIS FOR ROADWAY LINK ALTERNATIVES

This section contains technical analyses supporting the following overland links:

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ILIAMNA TO IGIUGIG ROADWAY LINK 7
IGIUGIG TO NAKNEK ROADWAY LINK 9
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SOUTH NAKNEK–NAKNEK–KING SALMON ROADWAY LINK 15
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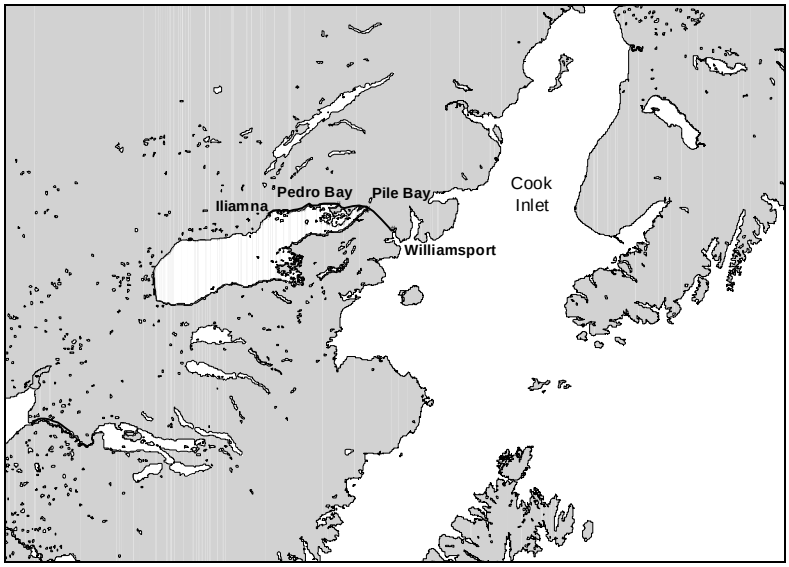
WILLIAMSPORT TO PILE BAY ROADWAY LINK



Making Regional Links

The existing Williamsport–Pile Bay Road is important because it connects lower Cook Inlet with the communities along Iliamna Lake as well as providing access to a commercially navigable water route (via Iliamna Lake and the Kvichak River) to Bristol Bay, Dillingham, and Naknek/King Salmon. Historically, the road has been used to transport fishing vessels of the Bristol Bay gillnet fleet between Cook Inlet and Bristol Bay. Travel between Cook Inlet and Bristol Bay using the Williamsport–Pile Bay Road allows fishers a safer, faster route than sailing around the Alaska Peninsula. Some freight and construction equipment are also transported via this route.

Existing Conditions

The Williamsport–Pile Bay Road is 15.5 miles long, consisting of one graded and drained earthen travel lane with no shoulder. The existing road climbs up the Williams Creek Valley to Summit Lake. From Summit Lake, the road gradually descends westward along the north side of Chinkelyes Creek, crosses the Iliamna River and ends at Pile Bay Village on Iliamna Lake. The road is in poor condition and is maintained only during summer months when a maintenance contractor is available. Portions of the road do not meet minimum width standards and are too narrow for current use. The four bridges along the project corridor are in need of repair or replacement. They are narrow and restrict oversized traffic. All of the bridges have sufficiency ratings below 50, and one has washed out (Chinkelyes Creek) and been dismantled, raising questions as to the road's passability. The major limitation restricting boat-haul traffic is the existing metal bridge across the Iliamna River, whose interior dimension of only 12 feet, is too narrow for the typical gillnet boat.

The Project

Reconstruct and widen the existing road in accord with the American Association of State Highway and Transportation Officials (AASHTO) design standards applicable to a

rural major collector with an ADT of less than 250 vehicles per day (1994). The road would be maintained year-round. The project would repair, replace, or widen, as appropriate, the four bridges. This project was listed in the 1997 Needs List as "Williamsport-Pile Bay Road," with no cost estimate, and a priority ranking of 4, accompanied by the following description: "Rehabilitate a gravel-surfaced haul road from Cook Inlet to Lake Iliamna. Includes bridge replacement or repair of three bridges). The project was ranked as a Priority 1 project in the 1997 Needs List.

Cost

Table 1
Williamsport–Pile Bay Road Project Synopsis

Length:	15.5 mi.	Surface:	Gravel	Capital Cost:	$12,300,000
Width:	22'	Lanes:	2' x 9' 2' Shoulders	M&O Cost:	$232,500

Note: Capital costs for a paved surface are estimated at $14,857,500, and annual M&O costs for a paved surface are estimated at $209,250.

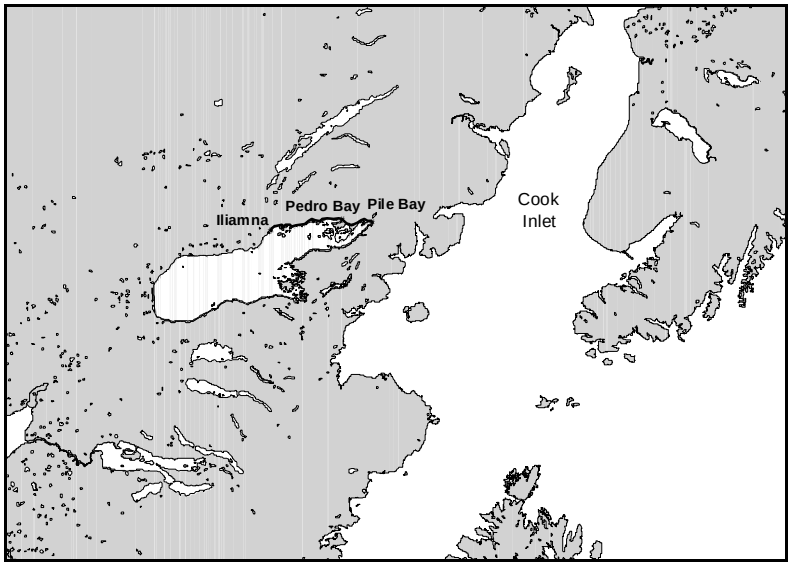
Construction and Maintenance

The road climbs 850 feet through the Chigmit Mountains in the first two miles benched on steep rock slopes. The road through this section is narrow and subject to avalanche hazards. As such, winter maintenance through this stretch would likely be difficult and expensive. Soils are sporadic but usually glacial in origin, resulting from moraines. Glacial tills, sands, and gravel are most likely.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 4,200 person trips per year.

ILIAMNA–PEDRO BAY–PILE BAY ROADWAY LINK



Making Regional LInks

This roadway would complete a link from Iliamna through to Williamsport on Cook Inlet, allowing travel from Cook Inlet into the interior of the Lake and Peninsula Borough at least as far as Iliamna. The road would connect as far as Nondalton, if the Iliamna-Nondalton link were also built. The road would provide Pile Bay and Pedro Bay access to the airport at Iliamna and would allow for a tourism circuit from Cook Inlet and potential access to Lake Clark National Park. The project would also provide the potential for interconnection of the electric power of the Tazimina Hydroelectric project.

Existing Conditions

Although no road exists from Iliamna to Pile Bay, a 46-mile trail from Iliamna to Pedro Bay does exist, as does a 12-mile trail from to Pedro Bay to Pile Bay, denoted by the Alaska Department of Natural Resources as a RS2477 route.

The Project

This project would build 38 miles of new roadway between Iliamna and Pile Bay, passing through Pedro Bay. The road would be constructed according to AASHTO design standards applicable to a rural major collector with an ADT of less than 250 vehicles per day. A likely corridor would follow the RS2477 trail route, which starts at the east end of the state road at Iliamna (right-of-way AA 8791), heading east, traveling about 0.5 miles inland from the northern shore of Iliamna Lake. The road would traverse coastal terrain of Iliamna Lake, which would require typical cut and fill construction. At Knutson Creek, it would continue southeast to Pedro Bay, passing south of Dumbbell Lake and continuing to Lonesome Bay. After traveling around Pile Bay to Pile Bay Village, the route would connect to the Williamsport-Pile Bay Road. As proposed, this road would cross about 15 creeks, which would require culvert placements or short-span bridges at these junctions.

Cost

Table 2
Iliamna–Pedro Bay–Pile Bay Road Project Synopsis

Length:	38 mi.	Surface:	Gravel	Capital Cost:	$45,600,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ Shoulders	M&O Cost:	$570,000

Note: Capital costs for a paved surface are estimated at $51,870,000, with annual M&O costs estimated at $513,000.

Construction and Maintenance

The corridor envisioned consists of relatively easy terrain with numerous stream crossings. Construction would include typical fill construction techniques. No unusual construction or design issues are anticipated.

Non-permafrost soils are most commonly associated with stream and river courses. These soils are sporadic, but usually glacial in origin resulting from moraines and valley fills. Glacial tills sands and gravel are most likely. Normal annual maintenance would be required for roadway upkeep. Because the area receives just over 60 inches of snow per year, plowing would probably account for the bulk of annual maintenance costs.

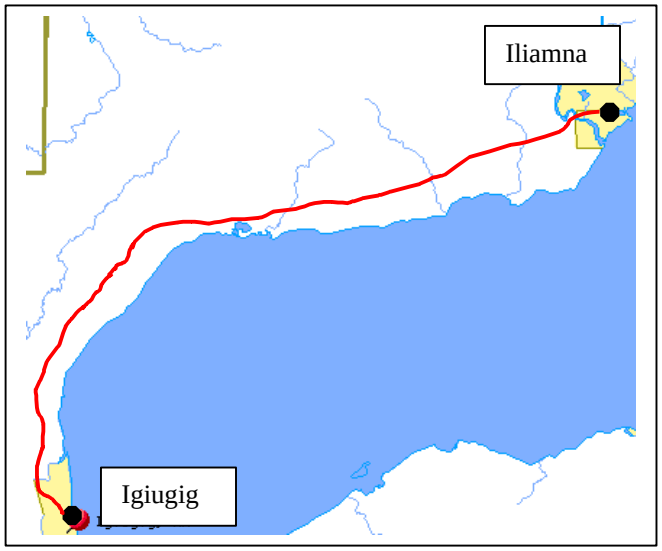
Estimated Demand

Year 2020 demand on this link is estimated at 17,900 person trips per year.

ILIAMNA TO IGIUGIG ROADWAY LINK

Intra-Regional Links

The Iliamna-Igiugig route is a necessary link in creating a connecting route across the Alaska Peninsula. A road alignment connecting the two communities would consist of bridging the Newhalen River Kvichak River, and many smaller rivers running along the coast of Iliamna Lake.



Existing Conditions

Iliamna and Igiugig are located on the northern shore of Iliamna Lake. There are no developed means of ground transportation between the two communities at the present time. Travel between Iliamna and Igiugig is based solely on aircraft or boating on Iliamna Lake. The terrain consists of lowlands with multiple lake and streams branching from Iliamna Lake and several other large river sources.

The Proposed Project

Construct a road according to *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994) using appropriate design standards for a rural major collector with an ADT of less than 250 vehicles per day. The road alignment stretches for approximately 56 miles along the coast of Iliamna Lake with major crossings of the Newhalen and Kvichak Rivers. The road would begin in Iliamna, southwest of the airport. Heading to the northwest, the road would travel south of Pike Lake nearly 2.5 miles before encountering the Newhalen River. A two-lane bridge, spanning approximately 250 feet, would need to be constructed just west of Pike Lake. Each lane would be nine feet wide with a two foot shoulder. After crossing the Newhalen River, the road would continue west crossing multiple creeks and streams including Pete Andrews Creek, Upper Talarik Creek and Lower Talarik Creek. Once the road has crossed Lower Talarik Creek, the road's bearing would veer to the southwest along the lowlands approximately two miles inland from Iliamna Lake. Continuing to follow the coast, the road would meander between small lakes and ponds before reaching the north shore of the Kvichak River. Another bridge would be required north of Igiugig, spanning approximately 400 feet near the mouth of the Kvichak River, to complete the route to Igiugig. The bridge spanning the Kvichak River would require two lanes consisting of nine foot travel ways with two-foot shoulders.

Cost

Table 3
Iliamna to Igiugig Road Project Synopsis

Length:	56 mi.	Surface:	Gravel	Capital Cost:	$69,700,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ Shoulders	M&O Cost:	$840,000

Note: Capital costs for a paved surface have been estimated at $78,940,000, and annual M&O costs for a paved surface have been estimated at $756,000.

Construction and Maintenance

The major issues involved with this project entail the development and costs associated with the two major bridges over the Newhalen and Kvichak Rivers. Materials for the two structures will need to be barged in by means of the Kvichak River, and landings will need to be developed for staging. Permitting and land use concerns will also be an issue with the increase in traffic and the presence of structures that may effect the fishing industry and other traditional area uses. Iliamna’s regional terrain is relatively flat with occasional small creek crossings. Typical fill techniques have been assumed to be used in the construction of the road with multiple stream crossings designed to accommodate fish passage. Non-permafrost soils are most commonly associated with stream and river courses. These soils are sporadic but usually glacial in origin resulting from moraines and valley fills. Glacial tills, sands, and gravel are most likely in the area. Normal annual maintenance will be required for the upkeep of the roadway as well as the bridge. Total precipitation is 20 inches annually, including 45 inches of snowfall, making snow removal a primary maintenance cost.

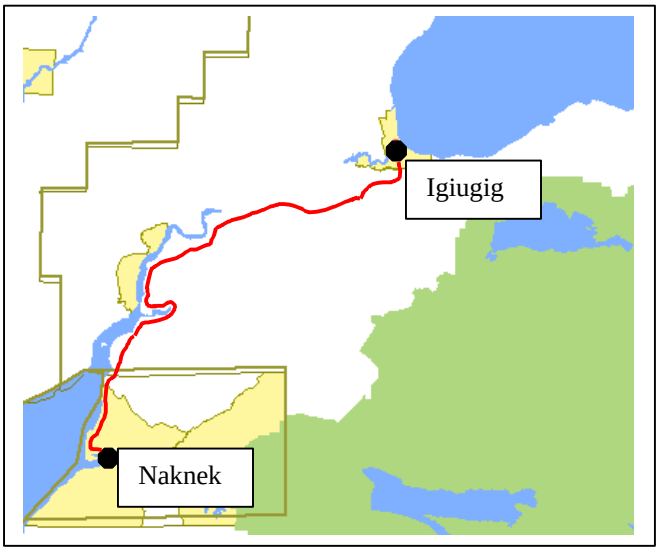
Estimated Demand

Year 2020 demand on this roadway link is estimated at 16,100 person trips per year.

IGIUGIG TO NAKNEK ROADWAY LINK

Intra-Regional Links

The Igiugig and Naknek link is essential in connecting the stem of the peninsula with the waters of Bristol Bay by means of ground transportation. This link would provide ground access to Bristol Bay the major hub of King Salmon, where many goods and services could be acquired.



Existing Conditions

There is no developed road link between the two communities of Naknek and Igiugig. Means of transportation to and from the two communities is primarily by aircraft or boat along the Kvichak River. An existing pioneer route, which leads north along the coast from Naknek, connects several communities along Bristol Bay before ending north of "Kvichak". The terrain consists of coastlands and wetlands with scattered lakes and ponds. A trail connection follows the north shore of the Kvichak River; it is primarily a winter travel route.

The Proposed Project

The project would consist of approximately 75 miles of roadway to connect Naknek and Igiugig. The project would be constructed according to *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994) using appropriate design standards for a rural major collector with an ADT of less than 250 vehicles per day. The road, beginning in Igiugig, would be routed to toward the southwest along the Kvichak River. The road alignment would encounter many creek crossings, including Pecks Creek and Ole Creek, which would require culverts that preserve fish passage. As the road alignment winds itself westward, along the coast of the Kvichak River, numerous wetlands and lakes would have to be avoided. As the Kvichak River turns to the south, the road alignment would parallel connecting into "Hallersville" from the North. The road would then be directed east and around the large mouth of the Wild and Scenic Alagnak River to an easier crossing of the river upstream. The crossing would take place approximately three miles east of Hallersville and then turn southwest toward the Kvichak River mouth. Once reaching Cape Horn, the road alignment would follow the pioneer route, which runs along the coast through Kvichak, Koggiung, and Libbyville before ending on the north side of Naknek. This pioneer route is still used to access setnet sites along the coast.

Cost

Table 4
Igiugig to Naknek Road Project Synopsis

Length:	75 mi.	Surface:	Gravel	Capital Cost:	$90,000,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ Shoulders	M&O Cost:	$1,125,000

Note: Capital costs for a paved surface are estimated at $102,375,000, with annual M&O for a paved surface estimated at $1,012,500.

Construction and Maintenance

The Kvichak River’s regional terrain is relatively flat with occasional small creek crossings. Typical fill techniques have been assumed to be used in the construction of the road with multiple stream crossings to accommodate fish passage. Non-permafrost soils are most commonly associated with stream and river courses. These soils are sporadic but usually glacial in origin resulting from moraines and valley fills. Glacial tills sands and gravel are most likely in the area. Normal annual maintenance will be required for the upkeep of the roadway as well as the bridge. Total precipitation is 20 inches annually, including 45 inches of snowfall, making snow removal a primary maintenance cost.

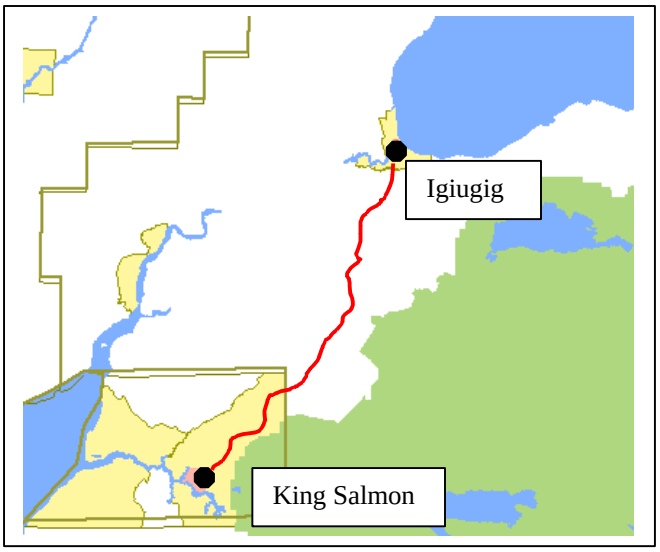
Estimated Demand

Year 2020 demand on this roadway link is estimated at 24,100 person trips per year.

IGIUGIG TO KING SALMON ROADWAY LINK

Intra-Regional Links

The Igiugig-King Salmon link would provide an alternative route to finish the overland crossing of the Alaska Peninsula connecting Cook Inlet with Bristol Bay. This link would also provide ground access for residents to get Bristol Bay and the major hub of King Salmon-Naknek, and its port and airport services.



Existing Conditions

The primary means of transportation between these two communities is by aircraft or boating on the Kvichak River to Naknek, then by road to King Salmon. There currently is not a developed road connecting Igiugig and King Salmon. There is a pioneer trail that does extend approximately six miles from King Salmon to the northeast and ends. The surrounding region consists of coastlands and wetlands toward the west with scattered lakes and ponds inland. The eastern part of the region is encompassed by large mountains and foothills located north of Naknek Lake.

The Proposed Project

The project would consist of approximately 56 miles of roadway to connect Igiugig and King Salmon. The project would be constructed according to *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994) using appropriate design standards for a rural major collector with an ADT of less than 250 vehicles per day. Beginning in the village of Igiugig, the proposed roadway alignment would travel to the south-southwest, crossing Pecks Creek and Ole Creek along with many other small crossings. Continuing south-southwest, the alignment would require crossing the Alagnak River (a wild and scenic river) and would navigate along the foothills of the mountains north of Naknek Lake outside of Katmai National Park and Preserve. The roadway would be routed to the southwest, crossing many branches of Pauls Creek and take a southerly bearing toward King Salmon Creek. Once the road alignment has crossed King Salmon Creek, the road will travel along the banks until it connects into the pioneer road system built by the U.S. Air Force northeast of King Salmon. After following the pioneer route southwest, the road alignment will terminate on the northwest side of King Salmon at the Alaska Peninsula Highway.

Cost

Table 5
Igiugig to King Salmon Road Project Synopsis

Length:	56 mi.	Surface:	Gravel	Capital Cost:	$67,200,000
Width:	22'	Lanes:	2' x 9' lanes 2' Shoulders	M&O Cost:	$840,000

Note: Capital and annual M&O costs for a paved surface are estimated at $76,440,000 and $756,000, respectively.

Construction and Maintenance

The roadway alignment does have several large river crossings, which will be an issue that will need to be addressed prior to construction. Each crossing will be required to have adequate culverts, which will allow fish passage. Typical fill techniques have been assumed to be used and construction of the road is not anticipated to present any unusual problems. King Salmon's regional terrain is relatively flat with occasional small creek crossings and foothills to the east. Clays and silts occur along the shores of Bristol Bay, while inland wet and moist tundra areas contain silt and organic soils. Total precipitation is 20 inches annually, including 45 inches of snowfall, making snow removal a primary maintenance cost.

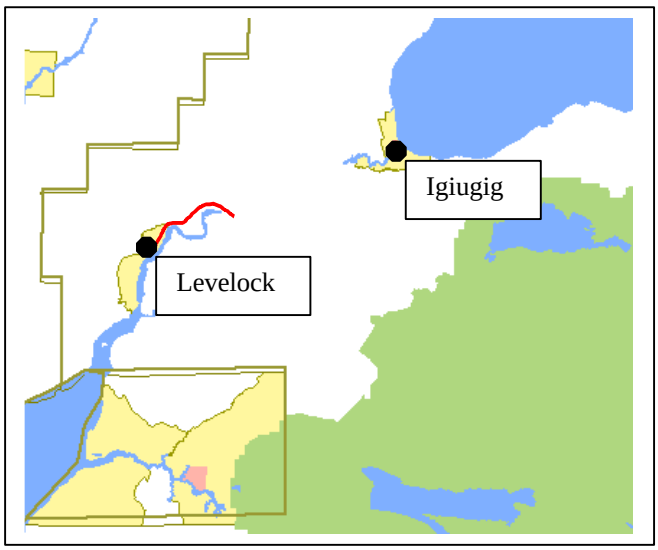
Estimated Demand

Year 2020 demand on this roadway link is estimated at 24,100 person trips per year.

IGIUGIG TO LEVELOCK ROADWAY LINK

Intra-Regional Links

The Igiugig-Levelock link is necessary to allow the east and west banks of the Kvichak River to be connected by ground transportation. This route will permit the village of Levelock to access larger communities such as King Salmon and Naknek for necessary goods and supplies. This roadway could also serve as the beginning for connecting the southwestern peninsula with communities' further west such as Dillingham.



Existing Conditions

There currently is not a developed road connecting Igiugig and Levelock. The primary means of transportation between these two communities is by aircraft or boating on the Kvichak River.

The Proposed Project

The project would consist of approximately 19 miles of roadway to connect the communities of Igiugig and Levelock. The project would be constructed according to *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994) using appropriate design standards for a rural major collector with an ADT of less than 250 vehicles per day. The new route would stem from the proposed link connecting Igiugig and Naknek and would include bridging the Kvichak River. Approximately 20 miles west of Igiugig, the road alignment would begin by stemming from the Igiugig and Naknek link, being directed north where it would cross the Kvichak River. A two lane bridge would be required to span the Kvichak River for approximately 400 feet. Each lane would provide a nine foot travel width with a two foot shoulder. After the bridge, the route would lead toward the West following the North coast of the Kvichak River. The alignment would encounter several creek crossings including Yellow Creek and Levelock Creek before meeting its final destination on the north side of Levelock.

Cost

Table 6
Igiugig to Levelock Road Project Synopsis

Length:	19 mi.	Surface:	Gravel	Capital Cost:	$24,300,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ Shoulders	M&O Cost:	$285,000

Note: Capital and annual M&O costs for a paved surface on this link are estimated at $27,435,000 and $256,500, respectively.

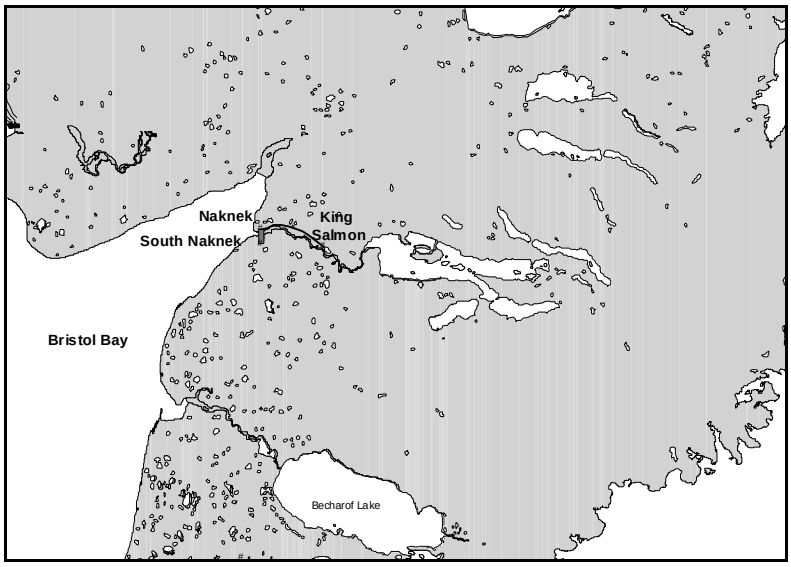
Construction and Maintenance

The Kvichak River’s regional terrain is relatively flat with occasional small creek crossings. Typical fill techniques have been assumed to be used in the construction of the road with multiple stream crossings to accommodate fish passage. This will assist in keeping construction cost of roadway sections to a minimum. Non-permafrost soils are most commonly associated with stream and river courses. These soils are sporadic but usually glacial in origin resulting from moraines and valley fills. Glacial tills sands and gravel are most likely in the area. Normal annual maintenance will be required for the upkeep of the roadway as well as the bridge. Total precipitation is 20 inches annually, including 45 inches of snowfall, making snow removal a primary maintenance cost.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 15,000 person trips per year.

SOUTH NAKNEK–NAKNEK–KING SALMON ROADWAY LINK



Making Regional Links

The King Salmon–Naknek Road provides an important connection between these eponymous communities. The well maintained road is approximately 15.5 miles long. However, it stops at the north shore of the Naknek River, leaving the town of South Naknek isolated. Connecting South Naknek to the road system would provide its residents with access to the regional airport and other services in the hub community of King Salmon. For instance, South Naknek's children, who are currently flown across the river to school, would benefit from a safer, more reliable mode of school transport. Two alternatives for linking the communities have been suggested: (1) an aerial tramway; and (2) a bridge, as reflected in the Needs List items below.

Table 7
Naknek Area Needs List Entries

Project Name	Description	Estimated Cost	Program	Priority
Naknek River Aerial Tramway	Construct aerial tramway between Naknek and South Naknek over the Naknek River.	4,000,000	CTP	2
Naknek River Bridge	Construct a Bridge between Naknek and South Naknek		CTP	3

Existing Conditions

Over the years, Naknek has developed into a major center for the Bristol Bay commercial sockeye salmon fishery. In fact, during the summer, the population swells to about 5,000 – most of whom are fishermen and cannery processor workers who arrive via the airport in King Salmon and use the road to access canneries in Naknek. The road, which is maintained year-round, is also used to transport millions of pounds of salmon to King Salmon, where the fish are flown out. The road, which has two 12-

foot lanes paved with a bituminous treated surface, is classified as a rural major collector and as a secondary federal aid route. Each lane has a 2-foot graded and drained shoulder. This 15.5-mile road includes three bridge crossings: at Leader Creek, at Paul's Creek, and at King Salmon Creek.

The Project

Build a bridge across the Naknek River to link South Naknek with Naknek and King Salmon. The bridge would consist of two lanes spanning the Naknek River just east of Horseshoe Bend and Chimenchun Creek. Each lane would be nine feet wide with two-foot shoulders. Construction of short roadway links would be required to connect the proposed bridge to the existing communities. The Naknek River Bridge is listed on the 1997 Needs List.

Cost

Table 8
South Naknek–Naknek–King Salmon Road
Project Synopsis

Length:	2,000'	Surface:	Concrete	Capital Cost:	$7,640,000
Width:	22'	Lanes:	2' x 9' lanes 2' shoulders	M&O Cost:	$48,500

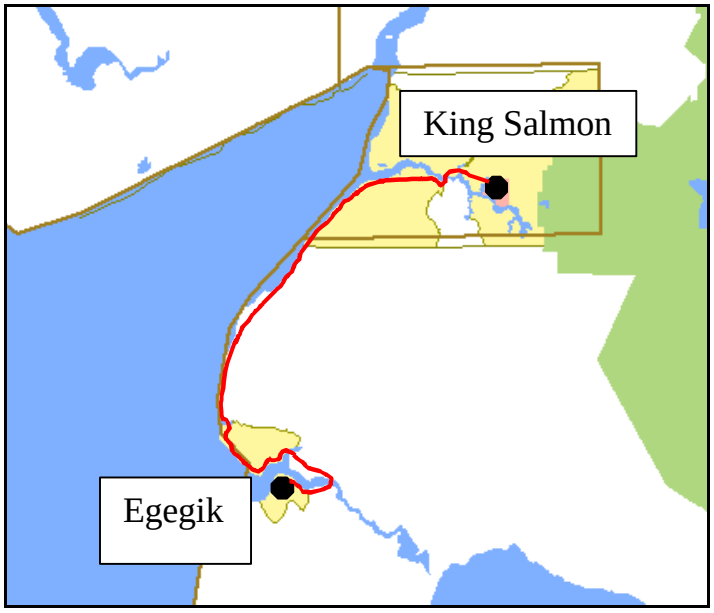
Construction and Maintenance

Bridge construction would present no obvious or unusual problems. Easy access to the bridge location is available for materials transport. Given the importance of fishing in the area, permitting will be an issue. Clays and silts occur along the shores of Bristol Bay, while inland wet and moist tundra areas contain silt and organic soils. The area receives an average of around 45 inches of snowfall, which means that plowing would be necessary.

Estimated Demand

Year 2010 demand on this roadway link has been estimated at 109,200.

EGEGIK TO KING SALMON ROADWAY LINK



Making Regional Links

The Egegik-King Salmon road is an essential link to connect all of the communities along the Alaska Peninsula to the major hub of King Salmon. This link is important to the community of Egegik, where commercial fishing is the primary means of income. This link would allow fresh fish to be transferred to King Salmon airport for distribution.

Existing Conditions

There is no developed roadway connecting the communities of Egegik and King Salmon. There is a winter trail that runs north along the coast of Bristol Bay. This trail does provide a link between Egegik and South Naknek, which is located approximately 14 miles west of King Salmon. This trail is primarily a route for smaller all terrain vehicles or snow machines and it is not developed or maintained. There is also a roadway, along the north shore of the Naknek River, connecting King Salmon with the community of Naknek. The main means of transportation between the communities of Egegik and King Salmon are by aircraft or boat via the Naknek River.

The Project

The project would consist of roughly 65 miles of roadway to connect Egegik with King Salmon and would included bridging the Egegik and King Salmon Rivers. The project would be constructed according to rural major collector standards as described in *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994). These design standards are appropriate for a rural roadway having an ADT of less than 250 vehicles per day. The project would start out of Egegik heading east along the Egegik River for approximately 7 miles. This would allow the bridging of the Egegik River to occur at a point where the river has necked down. A bridge would be constructed approximately

1/3 of a mile long to connect the north and south shores of the Egegik River. The bridge would consist of two nine foot lanes with two foot shoulders.

Once on the north shore, the route would lead to the northwest to the east shore of the King Salmon River (4 miles). A bridge, approximately 500 feet long, would be constructed connecting the east and west shores of the King Salmon River. The route would then lead along the west shore of the King Salmon River through the cannery and along the setnet sites of north Egegik to Coffee Point. From this location, the road would follow the Winter Trail northwest along the coast of Bristol Bay. The roadway would require the crossing of Bishop Creek and Big Creek as it traveled north along the coast. After passing Abe Peak and Cape Chichagof, the road would lead toward the northeast, still following the coastline. The route would lead west of Johnston Hill and into the south side of South Naknek. To be fully utilized, the bridge from South Naknek across the Naknek River to the Peninsula Highway would have to be built (described elsewhere in this memorandum). Once across the Naknek River the existing Peninsula Highway would be used to complete the journey into King Salmon.

Cost

Table 9
Egegik–King Salmon Road Project Synopsis

Length:	65 mi.	Surface:	Gravel	Capital Cost:	$87,000,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$975,000

Note: Capital and M&O costs for a paved surface have been estimated at $97,725,000 and $877,500, respectively.

Construction and Maintenance

The major issues involved with this project are the two bridges in the Egegik area crossing Egegik and King Salmon Creeks. Materials for the two structures will need to be barged in by means of the Egegik River, and landings would need to be developed for staging. Permitting will also be an issue of concern with the increase in traffic and the presence of structures that may effect the fishing industry. The trail along the coast will also require observation of tide fluctuation and erosion may effect the route of the road. Typical fill techniques have been assumed to be used in the construction of the road with multiple stream crossings to accommodate fish passage. Clays and silts occur along the shores of Bristol Bay, while inland wet and moist tundra areas contain silt and organic soils. Total precipitation is 20 inches annually, including 45 inches of snowfall, making snow removal a primary maintenance cost.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 36,000 person trips per year.

PILOT POINT TO EGEGIK ROADWAY LINK

Making Regional Links

Pilot Point and Egegik are located on the north side of the Alaska Peninsula. A road connecting the villages would provide an alternative link between the two fishing communities other than aircraft or boat service. Proposed as the northern terminus of the roadway along the peninsula, this road link would connect to the Bristol Bay regional ferry providing residents along the entire peninsula with ferry access to the hubs at King Salmon (via Naknek) and Dillingham.

Existing Conditions

The Alaska Peninsula consists of coastal lowlands that rise in elevation inland from Bristol Bay to the mountains of the Aleutian Range. The coastal lowlands have many small ponds and lakes, with many streams and rivers that meander toward Bristol Bay. The Bristol Bay-Nushagak lowlands consist of rolling hills, having elevations ranging from sea level to 300 feet. The climate in the region is a maritime climate, which is cool, humid, and windy. There is no known road or trail that connects the communities of Egegik and Pilot Point. Separated by small bodies of water and streams, the main source of transportation is aircraft or boat.

The Project

This project would construct roughly 55 miles of roadway to connect the communities of Pilot Point and Egegik on the northern coast of the Alaska Peninsula. The dimensions shown in the accompanying table conform to the standard of *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994) for a rural major collector with an ADT of less than 250 vehicles per day. The road will traverse northeast from Pilot Point and run along at an elevation near 100 feet to avoid wetlands when possible. The road will travel to the west of Babe Peak and Pike Lake. After passing Pike Lake, the route will lead west of Rusty Peak, traveling toward the east, avoiding coastal wetlands to the extent feasible. Traveling along the base of the hills, the route will lead to the north, approximately ten miles west of Becharof Lake. After passing west of Swampy Peak, the road will lead back to the west to a crossing of Swampy River. Once past Swampy River the road will travel north of Ege Peak and connect into Chief Hill Road near Egegik.

Cost

Table 10
Pilot Point–Egegik Road Project Synopsis

Length:	54.8 mi.	Surface:	Gravel	Capital Cost:	$65,760,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$822,000

Note: Capital and M&O costs for a paved surface have been estimated at $74,802,000 and $739,800, respectively.

Construction and Maintenance

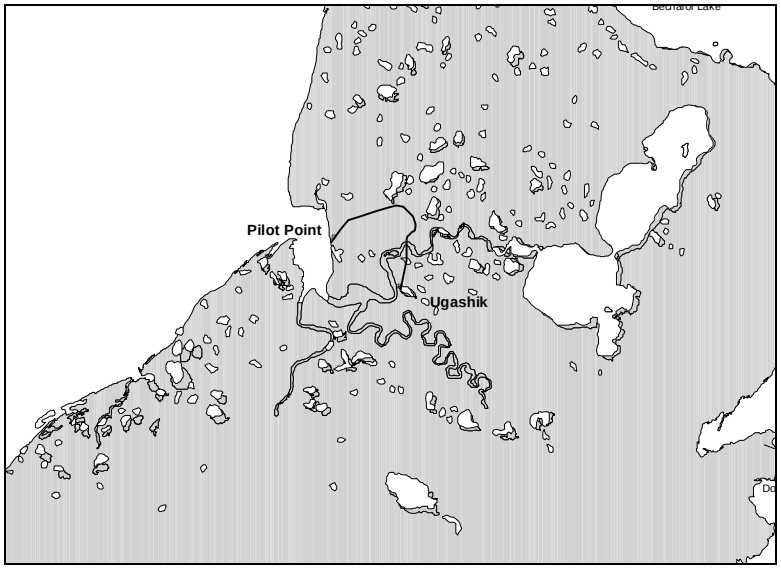
The roadway will be complex to build considering the distance and the wetland impact. The road will follow along the base of the rolling hills traveling through as much upland area as possible. The soil in the area consists of peat, clays, and silts underlain primarily by sedimentary rock. The majority of the road will be typical fill construction that will require large quantities of embankment to be imported or borrowed. The crossing of numerous streams will be necessary.

Maintenance considerations of the road are significant considering the climate and length of the road. Culverts will need to be regularly cleared and the road regularly plowed to maintain driving conditions. Pilot Point’s precipitation averages 19 inches per year, with 38 inches of snowfall while Egegik average precipitation is 24 inches, with 45 inches of snowfall per year.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 20,700 person trips per year.

PILOT POINT TO UGASHIK ROADWAY LINK



Making Regional Links

Pilot Point and Ugashik are located about 12 miles apart on the north side of the Alaska Peninsula. While Ugashik's population is small, the area supports an important salmon fishery combined with fish processing. Connecting the communities would avoid the need for duplicating services in Ugashik that are available in Pilot Point.

Existing Conditions

The Alaska Peninsula consists of coastal lowlands that rise in elevation inland from Bristol Bay to the mountains of the Aleutian Range. The coastal lowlands have many small ponds and lakes, latticed by streams and rivers. The Bristol Bay-Nushagak Lowlands consist of rolling lowlands, with elevations from sea level to 150 m. No known road or trail connects these communities. Separated by bodies of water and streams, the main source of transportation is aircraft or boat.

The Project

The project would construct roughly 11.8 miles of roadway to connect Pilot Point and Ugashik by bridging the Ugashik River. The project would be constructed according AASHTO standards for rural major collector appropriate for a roadway with an ADT of less than 250 vehicles per day. A proposed landfill located northeast of Pilot Point could form the starting point for the roadway to Ugashik. The road project would travel northeast from Pilot Point toward Pike Lake. Once around the wetlands to the south of the lake, the road would travel southeast toward the Ugashik River. A bridge spanning the Ugashik River north of Ugashik would be necessary.

Cost

Table 11
Pilot Point–Ugashik Road Project Synopsis

Length:	11.8 mi.	Surface:	Gravel	Capital Cost:	$22,160,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$177,000

Note: Capital and M&O costs for a paved surface have been estimated at $24,107,000 and $159,300, respectively.

Construction and Maintenance

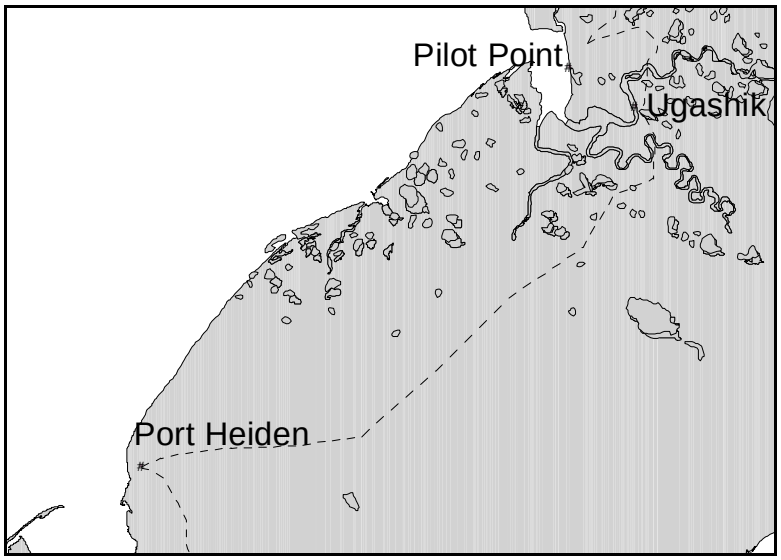
Construction would consist of typical fill techniques. Crossing the Ugashik River and other culverts would be required. Bridging the Ugashik River would require the majority of the funding. Roadway operations and maintenance would be typical, with occasional plowing and surface work.

Low cloud cover and fog frequently limit travel and would have to be considered in the safety requirements for the road. Precipitation averages 19 inches per year, with 38 inches of snowfall. The soil in the area likely consists of sedge peat clays and silts underlain primarily by sedimentary rock.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 4,400 person trips per year.

PORT HEIDEN TO PILOT POINT ROADWAY LINK



Making Regional Links

Pilot Point and Port Heiden are located on the north shore of the Alaska Peninsula. A road between the communities would provide Pilot Point, whose airport is among the region's least sufficient, with access to Port Heiden's 6,250-foot long runway.

Existing Conditions

The Alaska Peninsula consists of coastal lowlands that rise in elevation inland from Bristol Bay to the mountains of the Aleutian Range. The coastal lowlands have many small ponds and lakes, latticed with streams and rivers that meander toward Bristol Bay. The Bristol Bay-Nushagak lowlands consist of rolling hills, with elevations ranging from sea level to 300 feet. No known road or trail connects these communities. Separated by bodies of water and streams, aircraft and boats are the chief transportation modes.

The Project

This project would construct roughly 87 miles of roadway to connect the ports of Pilot Point and Port Heiden. The dimensions shown in Table conform to AASHTO design standards for a rural major collector with an ADT of less than 250 vehicles per day. The road would extend northeast form Port Heiden along the north side of the Aleutian Range. Several bodies of water, including Cinder River, Pumice Creek, and Old Creek, would need to be crossed. The road would then travel into the wetlands of the King Salmon River, running close to the base of the mountains along the higher ground. After crossing the King Salmon River, the route would lead north across several more creeks, finally crossing the Dog Salmon River. The road would then travel northwest into the south side of the village of Ugashik. From Ugashik, the road would cross the Ugashik River and head west into Pilot Point as a separate project.

Cost

Table 12
Port Heiden–Pilot Point Road Project Synopsis

Length:	87.8 mi.	Surface:	Gravel	Capital Cost:	$105,360,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$1,317,000

Note: Capital and M&O costs for a paved surface on this link have been estimated at $119,874,000 and $1,185,300, respectively.

Construction and Maintenance

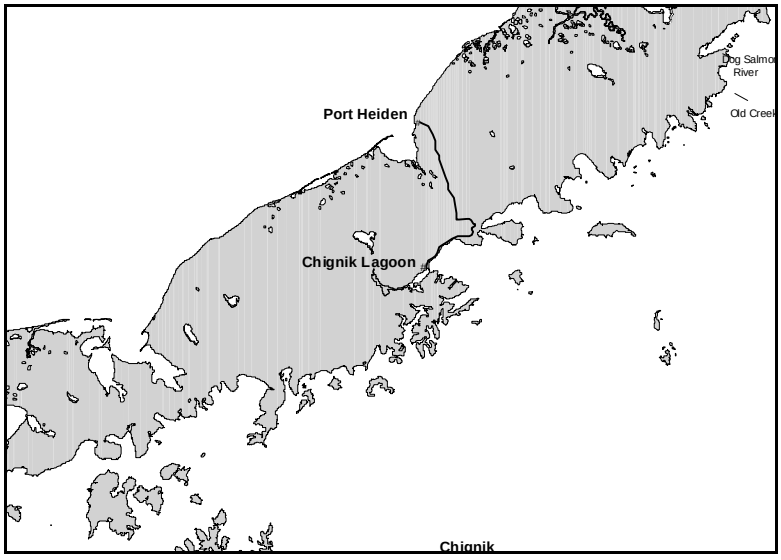
Building a road from Port Heiden to Pilot Point would be complex considering long distance and difficult terrain involved. The road would follow the base of the Aleutian Range, traveling through as much upland area as possible. The majority of the road would be typical fill construction that would require importation or borrowing of large quantities of embankment. Crossing the Ugashik River and numerous other streams would be necessary.

Maintenance considerations are significant given the area’s climate and the road’s length. Pilot Point’s precipitation average is 19 inches per year, with 38 inches of snowfall. Port Heiden averages 58 inches of snowfall per year. The coastal lowlands are dotted by small ponds and lakes, latticed by streams and rivers. The soil in the area consists of peat, clays, and silts underlain primarily by sedimentary rock.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 15,800 person trips per year.

CHIGNIKS TO PORT HEIDEN ROADWAY LINK



Making Regional Links

The Chigniks and Port Heiden are separated from the Meshik River by the Aleutian Range and wetlands. A roadway connecting these two communities would provide access across the Alaska Peninsula. The peninsula's southern communities would benefit from access to the Port Heiden airport and its 6,250-foot runway. Meanwhile, Port Heiden would have access to the Chigniks, including the deep water port and the Alaska Marine Highway System. Completing this link could provide significant freight shipment opportunities across the peninsula to other regions of western Alaska by reducing the need for shipments to sail around the peninsula through passes farther south.

Existing Conditions

A 45-mile trail starts at Chignik Lagoon and runs northeast along the coast of Chignik Bay and continues to and along Kujulik Bay. The trail turns north at North Fork, then northwest to meet the Aniakchak River beside Pinnacle Mountain. The Alaska Department of Natural Resources has identified the trail as a potential RS2477 route. Residents of Chignik Lagoon have long used this trail to travel north along the Alaska Peninsula. Another trail runs from Hook Bay north and west along Hook Creek over a low pass to Violet Creek in the Meshik River Drainage. This trail continues west toward Black Peak.

The Project

This project would construct roughly 62 miles of roadway to connect the north and south shores of the Alaska Peninsula. Port Heiden would constitute the northern terminus and the Chigniks would constitute the southern terminus. The road would be constructed according to AASHTO standards for a rural major collector with an ADT of less than 250 vehicles per day. The road would follow the existing trail along the coast of Chignik Lagoon crossing several creeks before reaching Dry Creek. At Dry Creek,

the road would travel up into the mountain valleys past Hook Creek, just west of Portage Pass. From this point, another trail would provide a potential route for the road to cross over the Aleutian Range. Once over the mountains, the road would head northwest, following Violet Creek into the Meshik River wetlands. Once through the Meshik River area, the road would travel north traversing the lower elevations of the Aniakchak Crater into Port Heiden. This project was not included in the 1997 Needs List.

Cost

Table 13
Chigniks–Port Heiden Road Project Synopsis

Length:	62 mi.	Surface:	Gravel	Capital Cost:	$74,400,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$930,000

Note: Capital and M&O costs for a paved surface on this link have been estimated at $84,630,000 and $837,000, respectively.

Construction and Maintenance

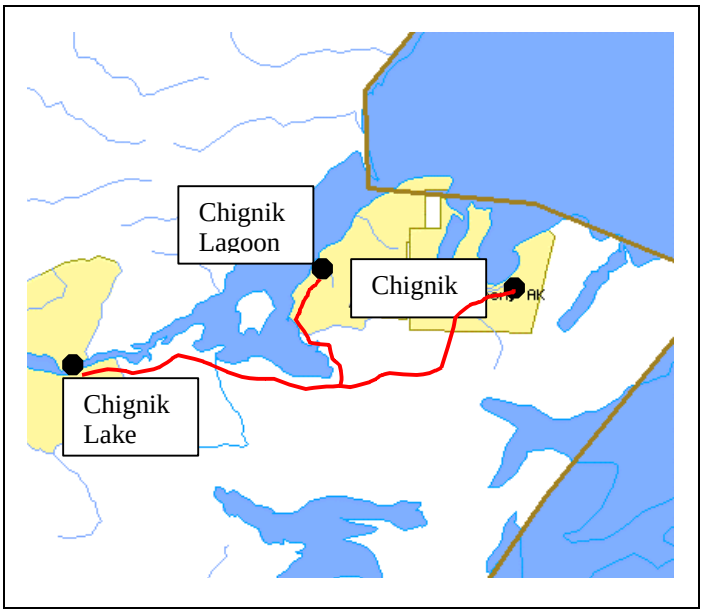
This road would be difficult to build given its long distance across difficult and remote terrain. The Pacific shoreline along Aleutian Mountains is generally rugged, characterized by steep cliffs, offshore spires, and small rocky islands. The majority of the road is anticipated to be typical fill construction over wetlands and along the coast. The most difficult section would be north of the Aleutian Range. Besides dozens of water crossings, the roadway would be routed through approximately eight miles of the Meshik River wetlands, which would mean that permitting issues would be prominent considering the embankment required and fish passage in this area. Maintenance would also be a major concern due to the road’s length and the difficulty of providing logistical support. The area’s weather, which includes high winds and heavy precipitation, is extreme, with an average snowfall of 58 inches. As such, the road would require plowing.

Estimated Demand

Year 2020 demand on this link is estimated at 24,800 person trips per year.

CHIGNIK BAY–CHIGNIK LAGOON–CHIGNIK LAKE ROADWAY LINK SYSTEM

Intra-Regional Links



The "Chigniks" form a triangle, with Chignik Lagoon at the apex, Chignik Lake at the left side of the base and Chignik itself at the right hand side of the base. No roads currently connect the Chigniks. There is a considerable amount of economic development potential by linking Chignik Lagoon and Chignik Lake to the deep-water port at Chignik. The cost of goods and the sharing of services are also potential benefits. In addition, the three communities could share a potential regional airport and have access to the Alaska Marine Highway through a single stop at Chignik.

Existing Conditions

There are no known roads or trails that connect these communities together. Separated by bodies of water and mountains, the main source of transportation is aircraft or boat.

Project

The project would construct approximately 21 miles of a new roadway to connect the communities of Chignik, Chignik Lagoon, and Chignik Lake. The road would be constructed in accordance with *A Policy on Geometric Design of Highways and Streets* (AASHTO 1994). The design standards for a rural major collector with an ADT of less than 250 vehicles per day are appropriate. The stretch of road between Chignik and Chignik Lagoon is 12.1 miles through mostly rolling terrain. The route passes through a mountain valley just outside Chignik and continues along the coast of Mallard Duck Bay and then north around Rocky Point to Chignik Lagoon. The road to Chignik Lake would branch off from this road near Mallard Duck Bay. This road would be approximately 9 miles long, traversing along coastal terrain to Chignik Lake. Both roadways will require several culverts for the multiple creek crossings. The roads would most likely be built in two phases, as funding becomes available. The 1997 Needs List includes a listing for "Chignik Area Inter-Village Road System Construction," which would "Construct approximately 20 miles of new road to link the communities of Chignik (Bay), Chignik Lagoon, and Chignik Lake." This project received a 3 priority, but no cost estimate was provided. In the project nomination package, the cost for the entire project was estimated at $26,000,000. In 1998, the DOT&PF estimated the cost of the project at 22.8 million for a single lane 14-foot-wide roadway with pullouts every 1,000 feet.

Cost

Table 14
Chignik Bay–Chignik Lagoon–Chignik Lake
Road Project Synopsis

Length:	21 mi.	Surface:	Gravel	Capital Cost:	$27,120,000
Width:	22’	Lanes:	2’ x 9’ lanes 2’ shoulders	M&O Cost:	$339,000

Note: Capital and M&O costs for a paved surface on this link are estimated at $30,849,000 and $305,100, respectively.

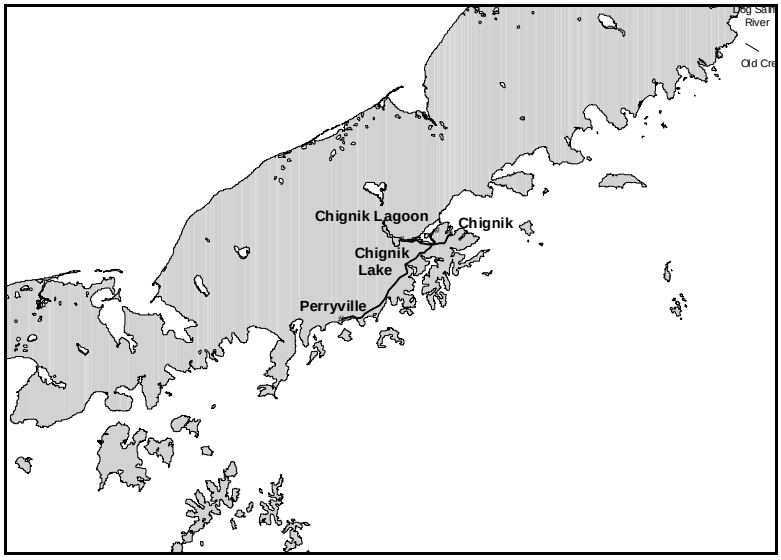
Construction and Maintenance

Chignik Bay and the shoreline along the Aleutian Mountains are generally rugged, characterized by steep cliffs, offshore spires, and small rocky islands. Precipitation averages 127 inches annually, of which 58 inches are snow. There is not anticipated to be any unusual construction or design incorporated in these roadways. Maintenance will be a major aspect in keeping these roads in good condition. The weather is very extreme in this region and the roads will require plowing to keep them accessible. With cloud cover and heavy winds and snow prevalent during winter months, avalanche hazards could be a problem.

Estimated Demand

Year 2020 demand on this link is estimated at 118,000 person trips per year.

PERRYVILLE TO CHIGNIKS ROADWAY LINK



Making Regional Links

This roadway would connect Perryville (and potentially Ivanof Bay, if that road were built) with the Chigniks. This link would facilitate the sharing of community services and provide better access to regional transportation services among the communities (e.g. a potential regional airport, the new small boat harbor at Chignik, and the ports and cannery facilities in the Chigniks).

Existing Conditions

No known roads or trails connect these communities. They are separated by numerous mountains, and consequently, marine and air transport predominate.

The Project

Construct a road according to AASHTO design standards for a rural major collector with an ADT of less than 250 vehicles per day. The project would construct a 40-mile road connecting Perryville with the Chigniks. This road would begin in Perryville and run up the coast along Mitrofania Bay to Ivan Bay. The road would channel through the mountain valleys, winding its way along the coast of Windy Bay toward Portage Bay. The road would tie into the Chignik region along the Mitrofania Creek (assuming the Chigniks inter-tie were constructed). There are numerous stream and river crossings along with a small mountain pass (approximately 1,000' elevation) just south of Windy Bay. The road from Perryville to the Chigniks was not included in the 1997 Needs List.

Cost

Table 15
Perryville–Chigniks Road Project Synopsis

Length:	40.1 mi.	Surface:	Gravel	Capital Cost:	$49,550,000
Width:	22’	Lanes:	2 X 9’ lanes 2’ shoulders	M&O Cost:	$601,500

Note: Capital and M&O costs for a paved surface on this link are estimated at $56,166,500 and $541,350, respectively.

Construction and Maintenance

Constructing this road would be complex given the 40-mile distance and the difficult terrain. Although the majority of the road would be typical fill construction, the small mountain pass south of Windy Bay presents challenging construction and maintenance issues. The numerous stream crossings would also require consideration in the construction phase to allow for fish passage. Average annual precipitation is 127 inches, including 58 inches of snow. Given the proposed road’s location at the base of many mountains and the presence of heavy winds, avalanche potential would have to be assessed.

Estimated Demand

Year 2020 demand on this link is estimated at 23,400 person trips annually.

BASELINE PROJECTS

The following three projects:

- Winter Trail Marking Project,
- Dillingham to Aleknagik Roadway Link, and
- Iliamna Nondalton Roadway Completion

constitute key elements of the surface transportation baseline for this planning effort. Baseline projects are those that have been programmed in the STP, and that already reflect a funding commitment.

WINTER TRAIL MARKING PROJECT (BASELINE)

Intra-Regional Links

For thousands of years Alaska Natives have relied on a system of winter trails to navigate across often, inhospitable and remote terrain. This traditional trail system provides an important land-based connection between many of the communities within the planning area. Originally traversed by dog sled or on foot, the routes are now typically traveled by snow machines or all terrain vehicles. Often these routes provide important links to the rest of Alaska and beyond, and during times when air travel is inaccessible, provide the only means of obtaining supplies, medical attention, and other important services to remote villages.

Existing Conditions

An existing winter trail system exists connecting the villages and communities of Goodnews Bay, Twin Hills, Togiak, Manokotak, Dillingham, Ekwok, New Stuyahok, Koliganek, Portage Creek, Levelock, and Naknek. Travel between villages is by snow machine over seasonally frozen tundra. After spring thaw these trails are generally incapable of supporting vehicle or foot traffic.

Winter storms, which cause drifting snow and poor visibility obscure the natural terrain features along the Bristol Bay coast that would typically used for navigation. Such conditions make navigation difficult and travel dangerous. These trail systems are not clearly marked. Travelers who become disoriented and lost in winter along these trails are at risk from exposure. Without a dependable visual marking system for navigation, the risk of becoming lost is increased substantially.

Project

This project will install high-visibility trail markers along each trail segment, providing a reliable navigation reference for travelers and search and rescue teams. The trail markers would be installed at maximum intervals of roughly 500 feet. The distance between markers will vary with terrain, wind, and soil conditions. The foundation for each marker is a four-foot length of reinforcing steel driven three feet into the ground. The marker will be a five-foot length of translucent plasic tubing with reflective materials attached, fastened to the steel rod with hose clamps. The routes and distances to marked are identified in the following table.

Table 16
Programmed Winter Trail Marking Links in Southwest Alaska Study Area

From	To	Approximate Trail Mileage
Goodnews Bay	Togiak	45
Togiak	Twin Hills	6
Twin Hills	Manokotak	47
Manokotak	Dillingham	23
Dillingham	Ekwok	10
Ekwok	New Stuyahok	10
New Stuyahok	Koliganek	28
Dillingham	Portage Creek	35
Portage Creek	Levelock	60
Levelock	Naknek	50
	Total	314

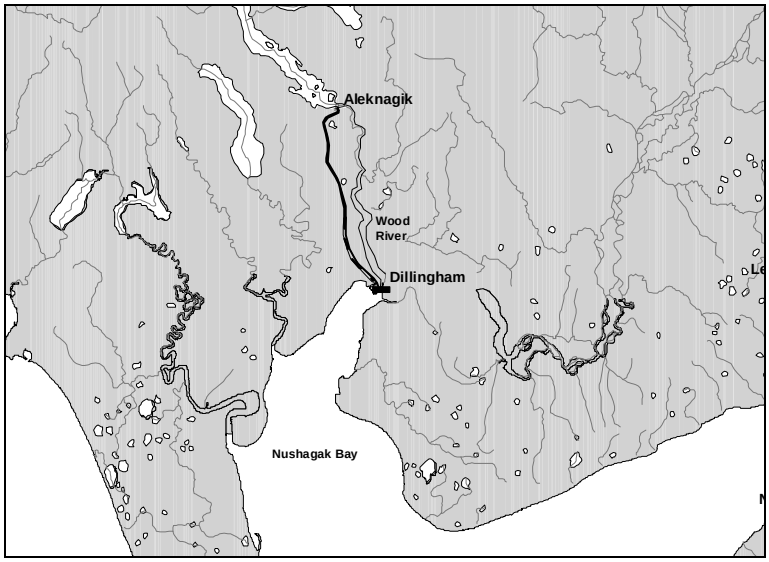
Cost

DOT&PF has $200,000 programmed for design and construction in the year 2000 to complete the project. The Department estimates that each marker costs about $19 installed.

Construction and Maintenance

The USF&WS raised concerns about the original design of the markers on past winter trial marking projects. They believed that the tubing collected water which froze, splitting the tubing and causing the markers to break. DOT&PF amended the design to have a cap on top to keep water out of the tubing.

DILLINGHAM TO ALEKNAGIK ROADWAY LINK (BASELINE)



Making Regional Links

Aleknagik is the only regional village with a road link to Dillingham. This road runs 23.3 miles northwest from Dillingham, and connects with Lake Aleknagik's south shore. The connection links Aleknagik residents with regional services and transportation access in the hub community of Dillingham. Since there is no bridge across the Wood River, road access depends on an ice road crossing, or passenger and freight shuttle across the river by skiff.

Existing Conditions

The Aleknagik road begins at Dillingham and runs up to the shore of the Wood River at Aleknagik Lake. However, the road does not access the north shore of Aleknagik Lake. The road, State Route # 050000, which was built in 1960, is surfaced with dirt and gravel and is maintained year-round by the DOT&PF. The first three miles of the roadway are classified as rural major collector, and the remainder of the route into Aleknagik is classified as rural minor collector. The road is also a secondary federal aid route. The road consists of two 9-foot lanes with no shoulders for the first eight miles. The rest of the route consists of two 10-foot lanes. The route includes approximately 11 culvert crossings. DOT&PF has made substantial improvements to this road recently. In February 1998, construction for minor realignment and application of an asphalt-treated base was advertised.

The Project

Completing the link between Dillingham and Aleknagik would entail building a bridge and 3,200 feet of road to connect the existing road with the north shore of Aleknagik Lake (and the community of Aleknagik) with Dillingham. The bridge will be located about one mile east of the community and consist of two lanes spanning the Wood River. Each 9-foot lane will have a 2-foot shoulder. The bridge will be located where

Lake Aleknagik drains into the Wood River. The STIP has programmed this portion of the project for FFY 98-99.

Also included in this project is the rehabilitation of the Aleknagik Road from Milepost 3 to Milepost 8 and resurfacing from Milepost 8 to Milepost 23, which will bring the road into conformance with AASHTO standards for a rural major collector with an ADT of less than 250 vehicles per day. The rehabilitation section has been listed by the STIP for FFY 98, and the resurfacing has been programmed for FFY 02 and beyond. A bridge site has not yet been selected.[1]

Cost

Table 17
Dillingham–Aleknagik Road Project Synopsis

Length:	23.3 mi.	Surface:	Gravel	Capital Cost:	$18,800,000
Width:	22'	Lanes:	2' x 9' lanes 2' shoulders	M&O Cost:	$375,000

Note: Capital and M&O costs for a paved surface on this link are estimated at $22,925,000 and $337,500, respectively.

Construction and Maintenance

Bridge construction across the Wood River presents no unusual problems, although the river's importance for fishing will raise environmental issues. Access is available from Aleknagik Road or by the Wood River for materials transport. Average snowfall in this region in approximately 65 inches, and the Wood River is ice-free from June through November. During the winter, ice build-up could increase annual maintenance costs.

Estimated Demand

Year 2020 demand on this roadway link is estimated at 267,400 person trips annually.

[1] The Aleknagik Road Rehabilitation MP 5-8 is described in the Needs List as "Reconstruct and resurface three miles of the Dillingham to Aleknagik Road with a hard surface." The estimated cost for this project, which is to be funded out of the CTP program, is $7,300,000, and it received a priority ranking of 1.

ILIAMNA–NONDALTON ROADWAY LINK (BASELINE)

Making Regional Links

While Newhalen and Iliamna are already linked by road, connections do not extend all the way to Nondalton, which is located to the north. Construction of a road between Nondalton and Iliamna, with a bridge over the Newhalen River, would put Nondalton into easier proximity to other regional communities and would reduce freight and travel costs for Nondalton residents by ensuring reliable access to Iliamna's major airport.

Existing Conditions

The Newhalen Village Road runs northeast out of Newhalen 2.75 miles to its intersection with the Iliamna Village Road. The Newhalen Village Road (state route #073020) is classified as a rural major collector consisting of two graded and drained 12-foot earth lanes without shoulders. Maintained year round, it is in good condition.

From the intersection, the link continues on to the Iliamna Village Road, which runs from the airport to the community of Iliamna. It is also a rural major collector, but has two 9-foot lanes with no shoulder. However, the road connection to Nondalton, (state route #073015) has not been completed. During the 1980s, 13 miles of pioneer road were built from Iliamna to a planned bridge crossing on the Newhalen River, three miles short of Nondalton. The first three miles of the road, beginning at the Iliamna Airport heading north, are well maintained. The road in this segment has two twelve-foot gravel lanes. The next six miles generally follow the Newhalen River and are less traveled, but in fair condition. This segment needs widening and re-grading for improved drainage.

From mile nine to the proposed river crossing, the road is truly of pioneer construction with few culverts or drainage improvements and needs reconstruction. Although the three miles on the Nondalton side of the river have been cleared of trees, no

construction has been completed. The road was originally planned to function as a rural collector, carrying 250-400 vehicles per day on a 20 foot-wide roadway surface with 2-foot shoulders.

The Project

Reconstruct a road according AASHTO standards for a rural major collector with an ADT of less than 250 vehicles per day. The first segment of the road, which proceeds three miles north of the Iliamna Airport, is well maintained and needs little reconstruction. The next section of road would require resurfacing, rehabilitation, and widening to accommodate two-foot shoulders for approximately the next six miles. The rehabilitation on this portion would include installation and repair of existing culverts for Alexcy Creek, Bear Creek, and Lovers Creek. An existing pioneer road would need to be reconstructed just north of Alexcy Creek to the proposed crossing of the Newhalen River.

A bridge would have to be built to span the Newhalen River to access the Nondalton side of the river. The proposed one-lane bridge would consist of four steel stringers with a deck comprised of precast concrete panels. The bridge would span approximately 653 feet with an overall width of 18.7 feet. Construction of the final three miles of roadway on the Nondalton would follow the cleared pioneer route into Nondalton. The STIP has listed "Iliamna to Nondalton Road Completion," for FFY 1999-2000. The project nomination package quoted $9,750,000 for construction of the bridge and the three miles of road on the north side of the river. The cost estimate completed as a part of this plan for the entire link is $14 million. While the Iliamna to Nondalton Road completion has been programmed,[2] the Iliamna-Pedro Bay-Pile Bay is not included in the Needs List.

Cost

Table 18
Iliamna–Nondalton Road Project Synopsis

Length:	16.3 mi.	Surface:	Gravel	Capital Cost:	$14,130,000
Width:	22'	Lanes:	2' x 9' lanes 2' shoulders	M&O Cost:	$262,300

Construction and Maintenance

Given Iliamna's relatively flat terrain with occasional small creek crossings, combined with the fact that the existing road needs rehabilitation only, construction costs for these roadway sections would be relatively low, and most of the resources would go to the Newhalen River Bridge.

Non-permafrost soils are most commonly associated with stream and river courses. These soils are sporadic but usually glacial in origin resulting from moraines and valley

[2] The Iliamna to Nondalton Road Completion project is described in the Needs List as "Construct a bridge across the Newhalen River and connecting road link to Nondalton." The estimated cost for this project, which is to be funded out of the CTP program, is $9,750,000. It has received a priority ranking of 1.

fills. Glacial tills, sands, and gravel are most likely in the area. Normal annual maintenance would be required for roadway and bridge upkeep. Because the area receives just over 60 inches of snow per year, plowing would account for the bulk of annual maintenance costs.

Demand Estimate

Year 2020 demand for the roadway link between Iliamna and Nondalton is estimated at 104,200 person trips per year.